

The future ocean: Perspectives from the past — A tribute to Professor Sir Nicholas Shackleton

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Every three years since 1983, the paleoceanographic community has come together at the International Conference on Paleoceanography (ICP) to discuss progress and share new discoveries. The 9th ICP was hosted in China and was attended by more than 500 participants from 31 countries, a third being PhD students. A large number of participants from mainland China and Taiwan also attended, greatly exceeding their representation at previous ICPs.

Thirty speakers in five topical sessions were invited to review the latest progress and highlight the current hot topics in paleoceanography. Three keynote lectures covered the major topics of the conference: Harry Elderfield gave a review of geochemical paleo-proxies and also showed memorial images from Nick Shackleton's life; Jean-Claude Duplessy gave a new insight into the deep ocean circulation over the last climatic cycle; and Christina Ravelo's lecture focused on the permanent El Niño-like conditions in Pliocene, which she named "El Padre". Additionally, 380 scientific posters addressed various aspects of current paleoceanographic research.

The conference was structured into the following five sessions:

Session 1 - Rates and dates: Time constraints on mechanisms for oceanic change

This session provided information on the duration and timing of paleoceanographic events and the speed of change, which can help constrain the mechanisms for changes in the Earth System. The session began with new approaches for extending astronomical time scales to the entire Cenozoic, and ended with addressing synchronization problems between paleoceanographic records from the late Quaternary.

Session 2 - Sea-land interactions and monsoons

This session consisted of two parts: the first emphasized the role of continental shelves in glacial cycles, and the second addressed various aspects of the Asian monsoon archives (e.g., loess, speleothems, deep-sea



Figure 1: The 9th ICP was attended by more than 500 participants from 31 countries

sediments), and numerical simulation of paleo-monsoon using coupled general circulation atmosphere-ocean-vegetation models.

Session 3 - Inter-ocean exchanges

A broad spectrum of ocean circulation topics was covered in this session, ranging from the meridional circulation to intermediate water, and from the changing Indonesian throughflow to the opening of Drake Passage. A remarkable feature of the session was the use of neodymium isotopes of clay, Fe-Mn leachates and fish teeth in paleo-circulation studies.

Session 4 - Biotic response to perturbations in ocean chemistry

Unlike the other sessions, session 4 discussed pre-Quaternary events to show, for example, how the Cretaceous Oceanic Anoxic Events (OAEs) and Paleocene-Eocene Thermal Maximum (PETM) are related to global carbon cycle perturbations. Pleistocene carbonate and silica chemistry of the ocean was also discussed in the context of glacial cycles.

Session 5 - The Holocene: Baseline for the future

This session reviewed new data and outlined the role of tropical climate processes, sea ice and deep-ocean flow in climate variability. Special attention was paid to

interhemispheric gradient and internal forcing of climate changes at the centennial- to millennial-timescales.

Following the tradition of previous ICPs, the Paleomusicology Concert once again showcased the musical talents of paleoceanographers, but this time the concert included traditional Chinese music shows played by Tongji University students. A visit to the State Key Laboratory of Marine Geology, Tongji University, led by Dr. Zhimin Jian and Prof. Pinxian Wang, was also organized. Additionally, over 170 participants attended the two during-conference tours (Zhujiyajiao and Zhouzhuang) and three post-conference field excursions (Chongming Wetland Park, Nanjing Visit and Geological Excursion, and Tibetan Plateau and Himalayas).

At the closing session, the Best Student Poster Prizes were granted to thirteen students, and it was announced that the next ICP will be held in San Diego, California, in 2010.

